ABSTRACT

Modern animation and modeling systems enable artists to create high-quality content, but provide limited support for interactive applications. Although complex forms and motions can be constructed either by hand or with motion or geometry capture technologies, once they are created, they are difficult to modify, particularly at runtime. Interpolation provides a way to leverage artist-generated source material. Presented here are methodologies for efficient runtime interpolation between multiple forms or multiple motion segments. Radial basis functions provide key mathematical support for the interpolation. Once the illustrated and described system is provided with example forms and motions, it generates a continuous range of forms referred to as a "shape" or a continuous range of motions referred to as a verb. Additionally, shape interpolation methodology is applied to articulated figures to create smoothly skinned figures that deform in natural ways. The runtime interpolation of the forms or motions runs fast enough to be used in interactive applications such as games.